BOOK REVIEW

The Search for Extraterrestrial Intelligence: Listening for Life in the Cosmos. Thomas R. McDonough. 1987. John Wiley & Sons, Inc. New York. 244 p. $19.95 cloth.

The search for intelligent life beyond our planet appeals to the frontier spirit. McDonough's book is a readable, entertaining account of the historical development and current status of this search. His basic premise is that identification of extraterrestrial intelligence would have as profound and fundamental an effect on our comprehension of ourselves and universe as did the demotion of the Earth from its central position following Copernicus and Galileo.

Following a brief primer on the origins of life as we know it, McDonough reviews the conditions on other planets in our solar system and concludes that the likelihood of other intelligent life in our neighborhood is remote. Consequently, the current search for extraterrestrial intelligence is focused beyond the solar system. This search derives primarily from two factors. First, on the basis of statistical analyses of the number of planets in the universe that could support life, many scientists, including McDonough, suggest that the chances for success are very high. Secondly, highly sensitive telescopes that could detect radio signals from remote regions of the universe have been developed. Several chapters describe efforts to detect extraterrestrial intelligence using radio telescopes.

McDonough's book includes many interesting anecdotes and insights. Among these is a description of the initial excitement and subsequent disappointment that attended the discovery of quasars. Political issues relating to the search for extraterrestrial intelligence, in particular a law that federal funding not be used to support this effort, are discussed.

Several factors detract from this book. McDonough's repeated excursions into the domain of science fiction writing and films often appear to serve no purpose. His surmising about the results of making contact with extraterrestrials from an advanced civilization, i.e., the possibility of expanded knowledge and an ability "to routinely fix the errors we call diseases," subtracts from the authority of his work, giving an aura of fantasy to the surrounding and otherwise valid material.

Ironically, the SETI effort, among the most imaginative of our scientific enterprises, may suffer from a lack of imagination regarding future developments in communications. Consider the entire history of a civilization as a line. At some point on that line, coherent radio signals start being broadcast. However, it is likely that other forms of communication will eventually replace radio and that the "time windows" during which both our civilization and some extraterrestrial one emit radio signals may be quite narrow. Radio emissions from both would cease as each progressed to better forms of communication. The statistical analysis that underlies our search using radio telescopes appears to be based on the premise that radio communications will continue to be used so long as a civilization exists. If radio is replaced by some other form of communication in an extraterrestrial civilization, our search may be for a very small event, one that comes into existence and then disappears after a brief period. If this view is correct, the likelihood of discovering extraterrestrial intelligence using radio telescopes is remote indeed.

Overall, McDonough's book is stimulating, entertaining and thought provoking. His ideas can be used to enliven lectures on topics ranging from the nature of life to the structure of the universe. If the book were recommended to them, younger students should be provided with some guidance lest they uncritically accept McDonough's speculations as facts. Professional scientists will find the time spent reading this book worthwhile.

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